Teaching Guide				
Identifying Data				2023/24
Subject (*)	Education in Mathematics		Code	652G01014
Study programme	Grao en Educación Infantil			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	Second	Obligatory	6
Language	Galician			
Teaching method	Face-to-face			
Prerequisites				
Department	Pedagoxía e Didáctica			
Coordinador	Soneira Calvo, Carlos	E-mail	carlos.soneira@udc.es	
Lecturers	Soneira Calvo, Carlos	E-mail	carlos.soneira@udc.es	
Web				
General description	This subject offers a basic training in Mathematics Education for future teachers of Early Childhood Education. It is aimed at: - Knowing the curricular treatment of mathematics in Early Childhood Education and the implications for teaching and learning. - Providing a basic mathematical training that enables students to carry out their future teaching work. - Knowing the basic theories about the development of mathematical concepts in early childhood. - Training to design sequences of activities to develop logical-mathematical thinking in Early Childhood Education. - Handling materials and resources for the teaching-learning of mathematics in Early Childhood Education - Training for group work Subject English Friendly			

Study programme competences / results	
Code	Study programme competences / results
A33	Coñecer os fundamentos científicos, matemáticos e tecnolóxicos do currículo desta etapa así como as teorías sobre a adquisición e desenvolvemento das aprendizaxes correspondentes.
A34	Coñecer estratexias didácticas para desenvolver representacións numéricas e nocións espaciais, xeométricas e de desenvolvemento lóxico.
A35	Comprender as matemáticas como coñecemento sociocultural.
A36	Coñecer a metodoloxía científica e promover o pensamento científico e a experimentación.
A39	Elaborar propostas didácticas en relación coa interacción ciencia, técnica, sociedade e desenvolvemento sustentable.
A40	Promover o interese e o respecto polo medio natural, social e cultural a través de proxectos didácticos adecuados.
A41	Fomentar experiencias de iniciación ás tecnoloxías da información e a comunicación.
B1	Aprender a aprender.
B2	Resolver problemas e tomar decisións de forma efectiva.
B3	Aplicar un pensamento crítico, autocrítico, lóxico e creativo.
B4	Traballar de forma autónoma con iniciativa e espírito emprendedor.
B5	Traballar de forma colaborativa.
B9	Autonomía na aprendizaxe.
B10	Capacidade de análise e síntese.
B11	Capacidade de busca e manexo de información.
B21	Coñecemento e comunicación en linguas estranxeiras.
B25	Utilización das TIC no ámbito de estudo e do contexto profesional.
C1	Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.
C2	Dominar a expresión e a comprensión de forma oral e escrita dun idioma estranxeiro.

C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C4	Desenvolverse para o exercicio dunha cidadanía aberta, culta, crítica, comprometida, democrática e solidaria, capaz de analizar a realidade, diagnosticar problemas, formular e implantar solucións baseadas no coñecemento e orientadas ao ben común.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C7	Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.
C8	Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.

Learning outcomes			
Learning outcomes	Study programme competences / results		
To know methodological strategies to develop spatial, geometric and developmental notions of logical thought by facilitating educational intervention procedures allowing the student to be the active protagonist in the construction of that logical and mathematical knowledge.	A33 A34	B1 B3 B4 B9 B10 B11 B21	C1 C3 C4 C6 C7 C8
To follow the "principle of globalization" when programming educational activities and tasks from 0 to 6 years, presenting activities that favor students the development of skills, skills and skills to improve their mathematical performance.	A34 A39	B1 B2 B10 B21 B25	C1 C2
To know the curricular aspects related to mathematics and put into practice in a Early childhood education classroom of didactic sequences preparing practical procedures to develop observation, intuition, reasoning and creativity in mathematical learning, promoting, by method and methodology, a proposal of activities that help to initiate the development of mathematical competence and other basic competences.	A34 A39	B2 B10	C1 C2
To follow "principle of globalization" when programming educational activities and tasks from 0 to 6 years, presenting activities that favor students in the development of skills and to improve their mathematical performance.	A33	B1 B2 B3 B4 B5 B9 B10 B11 B21 B25	C2
To be able to manage a mathematics classroom by developing didactic procedures that help to understand the meaning of basic mathematical operations, the measurement of magnitudes and spatial notions, for their application to real life through problem solving; knowing the interactive aspects involved and facilitating motivation and with an appropriate treatment of diversity	A33 A35	B1 B3 B4 B5 B9 B10 B11 B21	C1 C2 C3 C4 C6 C7 C8

To adapt didactic proposals that help students get started in the mathematical development of thinking and reasoning (types of statements, issues specific to mathematics); argue (mathematical justifications, heuristics, create and express mathematical arguments); communicate (oral mathematical expression, symbolic and graphic writing, understand expressions, convey mathematical ideas); modeling (structuring the field, interpreting models, working with models); propose and solve problems; represent and symbolize (encode, decode and interpret representations, using research strategies and familiarizing them with new perspectives and approaches to the development of mathematical knowledge.	A34 A35 A41	B1 B2 B3 B4 B5 B21 B25	C1 C3 C4 C6 C7 C8
To attend diversity in the mathematics classroom by encouraging students to build mathematical knowledge by their own means, respecting their strategies and channeling their conclusions, using specific materials and appropriate resources for the discovery and construction of logical and mathematical concepts.	A35 A36 A39	B1 B2 B3 B4 B5 B9 B10 B11 B21 B25	C1 C2 C3 C4 C6 C7 C8
To promote interest and respect for the natural, social and cultural environment, as well as gender equality	A40	B21	C2

Contents	
Topic	**Sub-topic**
Lesson 1. MATHEMATICAL LEARNING IN CHILDREN'S EDUCATION What is learning Mathematics in Early Childhood Education? Specificity of logical-mathematical knowledge Knowledge of Early Childhood Education teachers The Mathematics curriculum in Early Childhood Education.	What is learning Mathematics in Early Childhood Education? Specificity of logical-mathematical knowledge Knowledge of Early Childhood Education teachers The Mathematics curriculum in Early Childhood Education.
Lesson 2. THE CONSTRUCTION OF LOGICAL-MATHEMATICAL KNOWLEDGE	Characteristics of logical-mathematical knowledge. Acquisition of logical-mathematical structures in Early Childhood Education. Logic games Classification situations Sorting and sequencing situations
Lesson 3. THE CONSTRUCTION OF THE FIRST NUMERICAL KNOWLEDGE	Acquisition of the concept of number Teaching-learning situations for the number. Introduction to the decimal numbering system and calculation Introduction to solving mathematical problems
Lesson 4. INITIATION TO THE MEASURE: Notion of magnitude and measure. Measurement and estimation of magnitudes in Early Childhood Education. Phases in the teaching-learning process of magnitudes and their measurement	Notion of magnitude and measure. Measurement and estimation of magnitudes in Early Childhood Education. Phases in the teaching-learning process of magnitudes and their measurement
Lesson 5. SPATIAL NOTIONS IN CHILDREN'S EDUCATION.	Perception and representation of space. Topological notions in Early Childhood Education. Recognition of flat and three-dimensional figures. Introduction to classification according to logical-mathematical criteria

Planning

Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Workbook	A33 B3 B11 C6	6	12	18
Laboratory practice	A35 B2 B5 B10 C7	21	14	35
Oral presentation	A41 B5 B21 C1 C2 C3 C4	3	3	6
Guest lecture / keynote speech	A34	21	10	31
Introductory activities	A33	2	0	2
Supervised projects	A36 A39 B1 B4 B5 B9 B25 C8	2	20	22
Mixed objective/subjective test	A33 A40 B1	2	33	35
Personalized attention		1	0	1
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Workbook	Written materials with a detailed exposition of the subject contents.
Laboratory practice	Lab practice in the classroom, in small groups. It will deal with specific aspects of the topics, following scripts and with the help of materials.
Oral presentation	Exposition of the research project.
Guest lecture / keynote speech	Professor's exposition of each of the topic program consists in, indicating the aspects that the students must expand with their personal work and with the appropriate bibliographic guidelines.
Introductory activities	Presentation and contextualization of the topics. Justification and motivation activities. Detection of the student's knowledge about the subject, through different procedures: debate, storm of ideas, etc.
Supervised projects	A work will be proposed, to be carried out in groups, related to some content of the subject. A written report will be presented and a presentation will be made in the classroom, combining the use of ICT resources with oral presentation.
Mixed objective/subjective test	In-person written test which covers all the content of the subject, both those presented in the expository and interactive sessions.

Personalized attention	
Methodologies	Description
Mixed objective/subjective test Guest lecture / keynote speech Workbook Laboratory practice Oral presentation Supervised projects	The personalized attention that is described in relation to these methodologies are conceived as moments of face-to-face work with the teacher, for which reason they imply compulsory participation for the students. The way and the moment in which it will be developed will be indicated in relation to each activity throughout the course according to the work plan of the subject. These measures will be applicable both to students who regularly attend classrooms and to those with academic exemption.

Assessment			
Methodologies	Competencies / Results	Description	**Qualification**
Mixed objective/subjective test	A33 A40 B1	Proba escrita presencial. Valoraranse as respostas concretas e precisas, o grao de corrección segundo o pedido en cada pregunta, e a claridade na exposición. Engloba contidos das prácticas de laboratorio, das lecturas e da sesión maxistral. Serán probas individuais.	40

Laboratory practice	A35 B2 B5 B10 C7	Valorarase a solidez da argumentación, a claridade e precisión das respostas, a capacidade de comunicación, a solidez teórica das propostas e a actitude	20
Oral presentation	A41 B5 B21 C1 C2 C3 C4	Valorarase a claridade, a capacidade de síntese e selección dos contidos máis relevantes, a habilidade para presentar a información e a comunicación de resultados e conclusións. Tamén se valorará o uso axeitado das TICs	15
Supervised projects	A36 A39 B1 B4 B5 B9 B25 C8	Valorarase o grado de consecución dos obxectivos cumprindo as directrices docentes, o rigor, a argumentación, a profundidade da análise das situacións propostas, e a claridade da exposición. Realizaranse en grupo e expoñerase na aula nas últimas semanas do curso.	25

Assessment comments

Depending on the participation of the students in the subject, there are two options for the evaluation:
Option A
Students who attend and participate in 80% of the interactive sessions: The final grade will be the result of the results obtained in the following sections: (1) Laboratory practices: 20%; (2) Mixed test: 40%; (3) Supervised work (25%) + Oral presentation (15%): 40% between all parties.
In part (3), the indicated methodologies are considered together, with the percentages of the overall qualification indicated in parentheses, which add up to 40% in total for this part. A written report will be presented and a presentation will be made in the classroom, combining the use of ICT resources with oral presentation.
Each section will be qualified on a scale from 0 to 10. The evaluated laboratory practices that are not attended will be qualified with 0 in the calculation of the average of this section. To pass the subject it is necessary to achieve a minimum of 5 out of 10 in each of the three previous sections. In which case, the final total grade will be the weighted average of these three sections according to the percentages indicated above.
In case of not passing any of the sections, the final qualification will be that of suspense, with the grade corresponding to the weighted average of the sections not passed. On the 2nd call, only those sections failed in the 1st will be recovered, and the final grade will be calculated in a similar way. That is, with the weighted average following the same percentages in the case of having passed the 3 sections, the numerical grade being the weighted average of those not passed if there is more than one, otherwise.
Option B.
Students who do not attend or do not participate in 80% of the interactive sessions: In this case the evaluation will not be as in the previous case, but the mixed test will constitute 100% of the final grade. However, these students can choose, if they prefer, to join a work group, made up indifferently of #attendee or non-attendant students, and carry out the supervised work (or the ApS if they wish and it is possible). In this case, the supervised work qualification (or ApS) would constitute 20% of the final grade and the final mixed test 80%, as long as both parties have a grade of no less than 5 out of 10. Otherwise, the final grade will be the corresponding failed part.
On the 2nd call, only those sections failed in the 1st will be recovered, and the final grade will be calculated in a similar way. That is, with the weighted average following the same percentages in the case of having passed the 3 sections, and with the note corresponding to the weighted average of the sections not passed otherwise.
In general for all students: Each student must place a photo that identifies them in their Moodle user profile. Misspellings in the papers and materials submitted will reduce the final score.
Students with an academic exemption from attendance exemption officially granted by the UDC will be evaluated through option B.
In the evaluation works that the contents are delivered, they must be appropriately referenced throughout the work and in the references section using certain norms. The literal text must be declared using those rules. The paraphrasing must include the original sources of the ideas that are reworked.
The presence of scientific sources in the work is a sign of credibility that is an essential requirement to demonstrate academic excellence. It is recommended to consult: https://www.udc.es/gl/biblioteca/servicios/apoyo_investigacion/servicios_apoyo/index.html
Plagiarism must be avoided. The modification of article 11, section 4 b), of the Disciplinary Regulation of the student body of the UDC, approved by the Governing Council, will be applied, according to which the citations and references to any text must be declared, and the literal use of the text or ideas from other authors paraphrased without declaring the source, implies:
"Failure rating in the call in which the offense is committed and respect for the matter in which it was committed: the student will be graded with "fail" (numerical grade 0) in the corresponding call of the academic year, whether the commission of the fault occurs in the first call as in the second. For this, its qualification will be modified in the act of first call, if necessary."

Sources of information

Basic	AGUILAR LIÉBANA, B. et al., Construir, jugar y compartir : Un enfoque constructivista de las matemáticas en Educación Infantil. Enfoques educativos, 2010. ALONSO TAPIA, J. (2005). Motivaren la escuela, motivar en la familia. Madrid: Morata. ALSINA, A. (2012). Hacia un enfoqueglobalizado de la educación matemática en las primeras edades. Números,(80), 7-24.ALSINA, A. (2014). Procesos matemáticos en educación infantil:50 ideas clave. Números, (86), 5-28.ALSINA, A. (2022). Itinerarios didácticos para la enseñanza de las matemáticas (3-6 años) (1a edición, mayo 2022.). Barcelona: Graó.ARBONÉS, J. y MILRUD, P. (2011). La armonía numérica. Música y matemáticas.España: RBA.BALBUENA, L. y COBA, M.D. (1992). La matemática recreativa vista por los alumnos.Granada: Proyecto Sur. BAROODY D., CLEMENTS, H. & SARAMA, J. (2019). Teaching and Learning Mathematics in Early Childhood, in Brown, C. P., ;McMulllen, M. B., File, N. (eds.), The Wiley Handbook of Early Childhood Care and Education, New Jersey: Wiley Blackwell BETTELHEIM, B. (1999). Psicoanálisis de los cuentos de hadas. Barcelona: Crítica. BOLT, B Y HOBBS, D. (1991). 101 Proyectos matemáticos. Barcelona: Labor. BRISSIAUD, R(1993). El aprendizaje del cálculo. Visor. Madrid.CABELLO SALGUERO, M.J. (2011).Aprender jugando en educación infantil. Pedagogía Magna, (11), 164-170. CASTRO, E. e CASTRO, E. (Coords.), Enseñanza y aprendizaje de las matemáticas en Educación Infantil, Pirámide, 2016. CÉZAR, R. F.,HARRIS, C. y PÉREZ, C. A. (2014). Propuestas para el tratamiento de laCompetencia Matemática y de Ciencias a través de la literatura infantil enEducación Infantil y Primaria. Números,(85), 25-39.COCKCROFT, W. H. (1985). Las matemáticas sí cuentan. Madrid: MEC. CALLEJO DE LA VEGA, M.L. (1994). Un club matemático para la diversidad.Madrid: Narcea. CALLEJO DE LA VEGA, M.L. (2000). Educación Matemática y Ciudadanía.Propuestas desde los Derechos Humanos. República Dominicana: Centro Poveda.CHAMORRO, C.(1988). El problema de la medida. Madrid: Síntesis.COMAP (1999). Lasmatemáticas en la vida cotidiana. Madrid: Addison-Wesley.CONE BRYANT, S. (1993). El arte de contar cuentos. Barcelona: Hogar del Libro. CORBALÁN, F.(2002). La matemática aplicada a la vidacotidiana. Barcelona: Graó. CORBALÁN F. (2007). Matemáticas de la vida misma. Barcelona: Graó.EDO, M. (2008).Matemáticas y arte en educación infantil. Uno: Revista de didáctica de las matemáticas, 47,37-53.FÀBREGA, J., y Edo,M. (2015). Cultivar matemáticas. Infancia: educar de 0 a 6 años, (149), 29-37.FARRÁS, P. (2012).Las clases de música favorecen las matemáticas. Recuperado de http://blog.pequejuegos.com/las-clases-musica-favorecen-matematicas/FERNÁNDEZBRAVO, J. A. (2007). Números en Color. Editorial CCS. Madrid.FERNÁNDEZBRAVO, J. A. (2006). Didáctica de la Matemática en Educación Infantil. GrupoMayéutica. Madrid.FERNÁNDEZBRAVO, J. A. et SÁNCHEZ HUETE (2003). La Enseñanza de la matemática. Basespsicopedagógicas y fundamentos teóricos en la construcción del conocimientomatemático y la resolución de problemas. Editorial CCS. Madrid. FERNÁNDEZBRAVO, J. A. (2004). El número de dos cifras. Investigación didáctica einnovación educativa. Editorial CCS. Madrid.FERNÁNDEZBRAVO, J. A. Colección de cuentos que trabajan conceptos lógicos y matemáticos:ElHipopótamo gracioso y fuerte. Ed. CCS. Madrid, 2002La caja denúmeros I. Editorial CCS. Madrid, 2004La caja denúmeros II. Editorial CCS. Madrid, 2004FERNÁNDEZBRAVO, J. A. (2005). Enséñame a contar. Investigación didáctica sobre latécnica de contar como actividad matemática. Grupomayéutica. Madrid.FERNÁNDEZ CARRIÓN, M. (2011). Música y matemáticas: Conexiones curriculares para un mayor éxitoeducativo. Recuperado de http://recursostic.educacion.es/artes/GAIRÍN, J.M.e SANCHO, J. (2002). Números y algoritmos. (cap.1-5). Madrid. Síntesis.KAMII, C.(1995). El número en la educación preescolar. Visor. Madrid.KOTHE, S.(1986). Cómo utilizar los Bloques Lógicos de Dienes. Teide. Barcelona.LIERN, V. y QUERALT, T. (2008). Música y Matemáticas: la armonía de losnúmeros. Badajoz: FESPM.MARÍN-RODRÍGUEZ, M. (1999). El valor del cuento enla construcción de conceptos matemáticos. RevistaNúmeros, 39, 27-38. MARÍN RODRÍGUEZ, M. (2003). Cuentos para aprenderMatemáticas. ACTAS III JornadasProvinciales de Matemáticas. Consejería de Educación de la Comunidad de Madrid.Madrid, 89-102. MARÍN RODRÍGUEZ, M. (2006). Las matemáticas de unanovela. SIGMA, 29, 159-172. MARÍN-RODRÍGUEZ,M. Y CLIMENT-RODRÍGUEZ, N. (eds.). (2011). Investigación en EducaciónMatemática. Comunicaciones de los grupos de investigación. XV Simposio de laSEIEM (427-453). Ciudad Real: SEIEM. MARTÍN VERDEJO, F. (2003). Mirar elarte con ojos matemáticos. Uno: Revistade las matemáticas, (32), 83-96.MUÑOZ-CATALÁN, C. e CARRILLO, J. (Eds.), Didáctica de las matemáticas para maestros de Educación Infantil, Editorial Paraninfo, 2018PELEGRÍN, A. (2004). La aventura de oír. Cuentos tradicionales y literatura infantil.Madrid. Anaya. PERALTA CORONADO, F.J. (1998). Lasmatemáticas en el arte, la música y la literatura. Tendencias pedagógicas, (2), 235-244.PÉREZ GÓMEZ, R. (1997). Arte ymatemáticas. Aula de innovación educativa,(58), 12-14.RUIBAL, K. (2004). Matemáticas en la cocina. La Coruña: Clubmatemático Durán Loriga.SAA

ROJO, M. D. (1999). Las matemáticas de los cuentos y las canciones. Madrid: EOS.SCHILLER, P. y PETERSON, L. (1999). Actividades para jugar con las matemáticas 1y 2. Barcelona: CEAC.STEPHENSON, A. (2020). Teaching Mathematics In Early Childhood: Simple Activities That Make Learning Math Easy & Fun.TEJADA CUESTA, L. (2009). Lassalidas, un recurso para el aprendizaje en educación infantil. Revistadigital: innovación y experiencias educativas, (14), 1-11. TORRES, J. (2011). Globalizacióne interdisciplinariedad: el currículum integrado. Madrid: Morata.TRUEBA MARCANO, B. (2000). Talleres integrales eneducación infantil. Una propuesta de organización del escenario escolar.Madrid: Ediciones de la Torre. ZAMACOIS, J. (2002). Teoría de la música (I). España: Ideabooks.

Complementary	Os estudantes teñen á súa disposición multitude de recursos que completan estas referencias na plataforma Moodle.

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments
It is recommended to submit academic works electronically and, whenever the latter is not possible, not to use plastics. Please choose double-side printing, use recycled paper and avoid printing drafts. Sustainable use of resources and the prevention of negative impacts on the environment must be made. It should be taken into account the importance of ethical principles related to the values of sustainability in personal and professional behaviors. This subject is assigned to the English Friendly program.Equity conditions between men and women will be guaranteed; no discrimination will be allowed.

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.